

Reducing Diesel Emissions in Washington State: Moving Freight and Diesel Emissions Reduction

Reducing Diesel Emissions from Freight Transportation:

On the Roads



On the Rails



At the Ports



On the Farm



Almost all freight is fueled by diesel engines that move goods in global and national trade; support regional economies in manufacturing, industry, and agri-business; and deliver goods to consumers every day. These diesel engines keep our economy moving, but they also create emissions that can be harmful to health and the environment.

How Does Freight Transportation Contribute to Diesel Emissions in the State?

In 2002, heavy and light-duty trucks, marine vessels, and locomotives accounted for 56 percent of diesel particulate matter in the state. Additional emissions come from non-road diesel engines used to move goods in ports, rail yards, warehouses, and farms. Up to 90 percent of diesel engines in the state are privately owned and operated, many of them used for moving freight.

How Can We Reduce Emissions and Keep Goods Moving?

In the future, companies will be purchasing newer diesel engines and using cleaner fuels. There are also many voluntary strategies that can reduce emissions from engines in use today. Some of these are already underway in private companies and government organizations.

While some strategies are free, such as turning off an engine to reduce idling, many can be expensive. Most companies, especially smaller ones, may not have the available capital to implement them. Grants, loans, and other incentives can offset the cost, but federal funds are competitive and require matching money. It also can be challenging to use public funds for private fleets.

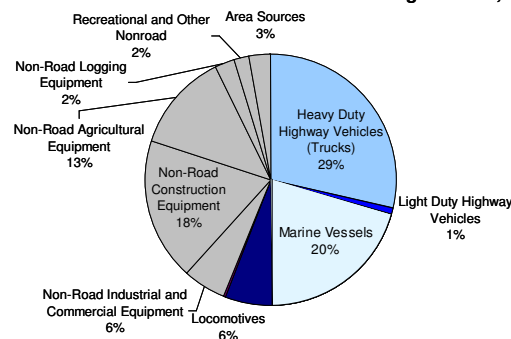
Reducing Emissions on the Roads

Trucks carry the majority of freight, about 60 percent of total freight tonnage in Washington, contributing 29 percent of diesel particulate emissions. Almost every commodity must be moved by a truck at some point on its journey from producer to consumer. This can include long-haul trips on interstates, as well as shorter distance trips on local roads and highways. Up to 80 percent of trucks trips in the urban areas are delivering goods to consumers on the local distribution system. Large companies usually purchase new trucks with the cleanest engines. After five to seven years, the trucks are sold to small companies or single owners who may use them for another 20 years. In Washington State, about 29 percent of diesel engines in commercial heavy-duty trucks are older than 1989.

Installing retrofit technologies, replacing older engines, using cleaner fuels, reducing idling, and making operational improvements can reduce emissions. As fuel and engine costs rise, many companies are already working to improve fuel efficiency. Larger shippers and carriers are often early adopters of technologies that reduce emissions. For example, UPS, Fed Ex, and Wal-Mart are beginning to use hybrid vehicles.

Lack of available capital and a cost-competitive industry may prevent many truck owners and operators, especially small companies and independent truckers, from implementing emission-reducing technologies. The cost is usually offset over time if technologies also decrease fuel use, but the initial price may be too expensive. Small companies are also more concerned that something will go wrong, potentially putting them out of business while their truck is out of service. Flexible programs and financing mechanisms can help overcome these hurdles. Good communication and collaboration also helps ensure that programs are easy to understand and implement.

Sources of Diesel Particulate Matter in Washington State, 2002



* Washington State Department of Ecology (2006)

Reducing Emissions on the Rails

Almost 900 locomotive engines operate in Washington, contributing six percent of all diesel particulate matter. Line haul locomotives are used to move freight long distances, while switcher engines move rail cars between tracks in rail yards that may be located in populated areas. These engines usually last for 40 years or more.

New fuel and engine standards will decrease harmful emissions from the rail industry over time. More is being done now by installing anti-idling devices, using alternative fuels, rebuilding engines, replacing engines, and employing operational efficiencies such as idle reduction programs.

The largest railroad companies in Washington, the BNSF Railway Company (BNSF) and Union Pacific Railroad (UP), as well as some smaller railroads, are also investing to lower diesel emissions. Many are members of EPA's SmartWay program and are partnering to reduce diesel emissions from port-related rail activities in Central Puget Sound.

Reducing Emissions at the Ports

Diesel engines are used to move a variety of commodities passing through Washington's ports every day. In addition to marine vessels, which contribute about 20 percent of all diesel particulate matter in the state, sources of diesel emissions near ports can include harbor craft, cargo-handling equipment, trucks, and rail locomotives.

The Puget Sound Maritime Air Emissions Forum, a public/private partnership in Central Puget Sound, is conducting a comprehensive inventory of all sources related to port activity in the region. This inventory will provide better information about port-related emissions and help identify strategies that will achieve maximum benefit. Many seaports throughout the state also have programs and participate in collaborative projects to reduce emissions. In Central Puget Sound these have included retrofitting engines, installing new engines, using cleaner fuels, improving operations to reduce idling, and conducting educational programs.

Some marine vessel owners are also voluntarily transitioning to vessels with more efficient, lower emitting engines. Ocean vessels are some of the most challenging diesel sources, although their emissions may occur far from populations, because most ships calling in the US are foreign flag vessels and subject only to international regulations.

Reducing Emissions on the Farm

Agriculture is a significant part of Washington's economy, and it also relies on diesel engines. Diesel engines are used in the growing, harvesting, and transporting of agricultural products. In 2002, non-road agricultural equipment contributed 13 percent of diesel particulate emissions in Washington State. Diesel engines also transport agricultural products to markets by truck, rail, barge, and ship. Heavy-duty highway vehicles used for transporting agricultural products are usually older engines; 69 percent in Washington State were manufactured before 1989. In general, these emissions occur far from population centers, but those living and working close to the exhaust can still be exposed.

EPA's SmartWay

The SmartWay Transport Partnership, part of the National Clean Diesel Campaign, is helping truckers and railroads adopt technologies that reduce fuel consumption and emissions. It also helps freight shippers make operational changes that decrease emissions. Most large shippers and carriers are members, including Fed Ex, UPS, Home Depot, BNSF, UP, Gordon Trucking, and many others.

Smartway is also partnering with a non-profit organization called Cascade Sierra Solutions (CSS) to make Smartway Upgrade Kits more available to truckers along the I-5 corridor.

The West Coast Diesel Collaborative

As another part of the National Clean Diesel Campaign, this collaborative helps reduce emissions from diesel exhaust by developing and implementing projects that leverage federal funds. WSDOT and many others participate in workgroups to share information and develop projects that reduce emissions from diesel engines.

Washington State Agencies

The Washington State Department of Ecology is one of many agencies helping reduce emissions from freight-related diesel engines in the state. Local clean air agencies, such as the Puget Sound Clean Air Agency and its Diesel Solutions program, are also furthering efforts to decrease emissions. The Department of Ecology is developing a statewide strategy to reduce diesel particulate matter in areas where exposure is a significant health concern. Initial efforts will focus on exhaust retrofits, engine or vehicle replacements, and idle reduction for highway vehicles. Due to limited availability of funds, most of these initial efforts will focus on public fleets.



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